

Memorandum

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SFUND RECORDS CTR
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To : David P. Spath, Ph.D.
Senior Sanitary Engineer
Sanitary Engineering Branch

Date : January 31, 1986

Subject: Q A Evaluation of
Aerojet Perchlorate Data

Via: Benjamin R. Tamplin, Ph.D., Chief *BRT*
Sanitation and Radiation Laboratory

From : Michael G. Volz, Ph.D. *MGV*
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I have reviewed the perchlorate (ClO_4^-) data generated by CAL in support of the San Gabriel Supplemental Sampling Program (SSP).

It is my opinion that this entire data package is invalid. My justifications are:

1. Reported concentrations of ClO_4^- in field blanks occurred in over 80% of the cases evaluated. In many instances, these levels were far too high to lend credence to the belief that those concentrations reported for actual field samples are indicative of groundwater contamination. We understand that CAL rarely supplies sampling containers and that another EPA contractor, CH₂M Hill, provided them as well as the water which served together as field blanks. The source of ClO_4^- or other interfering compound(s) reportedly present in field blanks should be determined as a priority and other alternative analytical procedures investigated in hopes of eliminating this discrepancy.
2. Those concentrations of ClO_4^- reported in actual field samples were not corrected for the effects of ambient NO_3^- which is known to interfere positively with ClO_4^- in the analytical method used by CAL. However, Tony Wong of CAL has told SRL that previous investigations of the NO_3^- effect had been carried out by the laboratory and that these results suggested that 10 ppm of NO_3^- elicited a response characteristic of 0.5 ppm ClO_4^- . SRL has further learned from SCL that Br^- and CO_3^{2-} interfere positively and SO_4^{2-} interferes negatively.

Because well water samples taken during the SSP would have been expected to contain NO_3^- concentrations from 20- to greater than 100 ppm, it would be expected that a variably positive bias would have been introduced into the ClO_4^- data by an uncorrected NO_3^- interference. Other ions present at unknown concentrations probably contributed both positively and negatively to the ClO_4^- response. The overall uncertainty regarding a "positive ClO_4^- response" is

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certainly in contrast to the view apparently held by EPA which still feels "that the data suggest the presence of perchlorate ion." (Paragraph 2, of January 14, 1986 letter from D.P. Spath - SEB to P.A. Rogers - SEB).

3. The source and, therefore, comprehensive verification of the analytical method for ClO_4^- utilized by CAL has not been identified. Tony Wong of CAL is attempting to clarify this issue and has notified SRL that he will inform us of the results of his efforts. CAL is attempting to implement an ion chromatographic technic to buttress its analytical capability. However, without appropriate modifications of instrumentation, anticipated limits of detection during direct analysis would be ≈ 0.3 ppm for ClO_4^- (Dionex Application Note 18R).

Please contact SRL should you need further assistance.

cc: G.W. Fuhs, Dr. sci. nat., DL.
F. Baumann SCL